UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,737	01/27/2004	Carl A. Reiser	C-3363	1103

7590 12/12/2006

M. P. Williams
210 Main Street
Manchester, CT 06040

EXAMINER	
ONEILL, KARIE AMBER	
ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,737	REISER, CARL A.	
	Examiner	Art Unit	
	Karie O'Neill	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-3 are pending in this office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. (US 2004/0137290 A1) in view of Rueegge et al. (US 2002/0055023 A1) and in further view of Skidmore et al (US 2005/0136296 A1).

Woods et al. disclose a method and apparatus, in Figure 1, having a fuel cell power plant providing electrical power to a load (paragraph 0015), comprising: a fuel cell power plant (10) with a hydrogen fuel cell (2) having fuel reactant gas flow fields (201, 205); means for providing fuel reactant gas to said flow fields through the reformer (1); and a means for purging at least periodically, at least a small amount of partially depleted fuel reactant gas exiting from said flow fields. The fuel cell (2) typically operates at anode side stoichiometric ratios and periodic purging of contaminants in the anode flow field take place through line (207) by activating a purge valve (208) connected to line (209) to vent air to a safe location (211) (paragraph 0040).

Woods et al. does not disclose a means for sensing the direction of flow of gas between said flow fields and ambient and means for disconnecting the electrical load

from the fuel cell stack in the event that there is no flow of gas from said flow fields toward ambient.

Rueegge et al. disclose in Figure 6, a means for sensing the direction of flow of gas between the flow fields and ambient by placing a pressure regulator (4) in the exhaust gas flow (3) at two places (31, 32) which is dependent upon the mass flow of the gases. A valve (8) is connected to the connection points (31, 32) and allows only slight gas flows to pass to ambient (paragraph 0027). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a sensing means with the fuel cell of Woods et al., because Rueegge et al. teach using the pressure regulator to control the valve so as to keep the gas flow constant through the flow fields (paragraph 0027).

Woods et al. and Rueegge et al. do not teach a means for disconnecting the electrical load from the fuel cell stack in the event that there is no flow of gas from said flow fields toward ambient.

Skidmore et al. disclose a means for disconnecting the electrical load from the stack in the event there is no flow of gas from flow fields to ambient, by closing the control valves (44) that supply reactant flows to the fuel cell stack and then electrically disconnecting the load (50) from the stack (20) (see Figure 1 and paragraph 0034). For purposes of disconnecting the load (50) from the stack (20) the fuel cell system (10) may include a switch (29) that is coupled in series between the fuel cell stack (20) and the load (50) so that by opening the switch the fuel cell system may disconnect the stack from the load (paragraph 0035). Therefore, at the time of the invention it would

have been obvious to one of ordinary skill in the art to disconnect the fuel cell of Woods et al. and Rueegge et al. from the load, because Skidmore et al. teach disconnecting the fuel cell from the load when the stack exhibits unstable behaviorand produces a relatively low level of power for the load (paragraph 0032).

With regard to Claim 3, Rueegge et al. disclose a flap or aperture diaphragm (30), located in the exhaust gas flow line (3) between two connection points of the pressure regulator (4), suitable for producing a pressure difference which is dependent on the mass flow of gases in the exhaust gas line (paragraph 0027). The pressure built up by the aperture diaphragm influences the let off valve (9) by means of the pressure difference which acts on the pressure regulator located next to the aperture diaphragm (paragraph 0028). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a flap disposed with the exhaust line with the fuel cell of Woods et al, because Rueegge et al. teach with the aperture diaphragm the ratio of the two gas flows (air and fuel) can be changed and when required readjusted (paragraph 0020).

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. (US 2004/0137290 A1) in view of Kawasumi et al. (US 2002/0001741 A1) and in further view of Skidmore et al (US 2005/0136296 A1).

Woods et al. disclose a method and apparatus, in Figure 1, having a fuel cell power plant providing electrical power to a load (paragraph 0015), comprising: a fuel cell power plant (10) with a hydrogen fuel cell (2) having fuel reactant gas flow fields

(201, 205); means for providing fuel reactant gas to said flow fields through the reformer (1); and a means for purging at least periodically, at least a small amount of partially depleted fuel reactant gas exiting from said flow fields. The fuel cell (2) typically operates at anode side stoichiometric ratios and periodic purging of contaminants in the anode flow field take place through line (207) by activating a purge valve (208) connected to line (209) to vent air to a safe location (211) (paragraph 0040).

Woods et al. does not disclose a means for sensing the direction of flow of gas between said flow fields and ambient and means for disconnecting the electrical load from the fuel cell stack in the event that there is no flow of gas from said flow fields toward ambient.

Kawasumi et al. disclose in Figure 1, pressure sensors (24, 25) for measuring the pressure of respective exhaust systems of the air electrode and the fuel electrode in the fuel cell (15) (paragraph 0032). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a sensing means with the fuel cell of Woods et al., because Kawasumi et al. teach if the operation pressure changes and the flow rate of the gas changes the fuel cell system will run less efficiently, making it important to sense the flow of gases between flow fields and ambient (paragraph 0033).

Woods et al. and Kawasumi et al. do not teach a means for disconnecting the electrical load from the fuel cell stack in the event that there is no flow of gas from said flow fields toward ambient.

Skidmore et al. disclose a means for disconnecting the electrical load from the stack in the event there is no flow of gas from flow fields to ambient, by closing the

control valves (44) that supply reactant flows to the fuel cell stack and then electrically disconnecting the load (50) from the stack (20) (see Figure 1 and paragraph 0034). For purposes of disconnecting the load (50) from the stack (20) the fuel cell system (10) may include a switch (29) that is coupled in series between the fuel cell stack (20) and the load (50) so that by opening the switch the fuel cell system may disconnect the stack from the load (paragraph 0035). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to disconnect the fuel cell of Woods et al. and Kawasumi et al. from the load, because Skidmore et al. teach disconnecting the fuel cell from the load when the stack exhibits unstable behaviorand produces a relatively low level of power for the load (paragraph 0032).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill whose telephone number is (571) 272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Karie O'Neill
Examiner
Art Unit 1745

KAO

DAH-WEI YUAN
PRIMARY EXAMINER